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VOLVULUS OF THE CECUM—WITH LEFT SIDED COLON

REPORT OF CASE

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Visalia

FROM a purely anatomical standpoint, there are few conditions more interesting than non-rotation of the bowel. From the surgeon's viewpoint, even more interest is attached to such congenital malformations, when the surgical possibilities of such conditions must be kept in mind and acted upon in emergencies. The presentation of this article is therefore with two objects in mind, to review some of the anatomical possibilities of non-rotation and mal-rotation, as well as fixation of the bowel, and to make observations regarding the surgical care indicated, when emergencies such as volvulus occur, requiring immediate operative procedure for relief.

COMMENT ON LITERATURE

McGregor¹ has divided rotation of the mid-gut into three stages, embryologically. He states that volvulus of the ileo-cecal segment is the typical lesion in later life resulting from imperfect rotation or deficient fixation of the gut. In our case, both of these latter deficiencies were present, the volvulus being directly related to two factors, the incomplete rotation, which stopped during

McGregor's late second stage, thus leaving the cecum in the left hypochondrium, and the unusual mobility of the proximal colon due to deficient fixation of that portion of the mesentery distal to the superior mesenteric artery.

Wolfer,² et al (1942) have presented an interesting classification of various defects in rotation and fixation, which conditions were observed in the dissecting room, and also were seen at the time of operation. The case to be presented falls into Wolfer's group VI, that is the group which has a common ileo-cecocolic mesentery, with complete freedom of the right colon. This case was similar to other conditions described in literature, but was not a true twisting of bowel about itself as an axis. Rather, it was a condition of looping of the bowel, much as a child in a swing would cause the swing to become looped by rotating himself and the swing about a vertical axis. In the case to be described, this looping involved the entire ileum, cecum, and ascending colon, the direction of the twist being clockwise, about the superior mesenteric artery as an axis, when viewed from below and anterior. The extent of this twist was approximately 270°. Other similar cases have been reported by Corner and Sargent³ (1905). Rixford (1920), Carter⁴ (1938), and Low and Hilderman (1940). Other reports in literature have given classifications, namely Treves (1900), Corner and Sargent (1905), Faltin (1902) and McGowan and Dixon (1936), but these classifications do not particularly aid in determining the proper procedure to carry out when surgical crisis occurs. Wolfer, et al, again have presented the sound philosophy which has always been true, that sound surgical judgment is of more importance than any detailed classification.

Statistical study of various groups of cases has revealed that 70 per cent of all cases of volvulus of the cecum occur in males. Etiological factors, other than congenital malformations have been mentioned by Beeger, namely lifting, excessive eating, violent exercise following meals, and pregnancy. Among the interesting case reports in recent literature were those of Graham⁵ (1926), in which the volvulus occurred during a case of typhoid fever; Rose's³ report (1941) in which the volvulus was associated with puerperal endometritis and gangrenous vulvitis, thus making preoperative diagnosis almost impossible; Morris's⁴ case (1941) in which volvulus of the cecum occurred during pregnancy, was diagnosed by x-ray studies, and successfully treated, even to preservation of the pregnancy; Nelson's⁶ case (1928) in which the volvulus occurred ten days postoperatively; and Kirby's⁷ case (1929) in which resection and anastomosis three days after occurrence of the volvulus, resulted in recovery.

The principles for treatment are of prime importance to the surgeon. Bundshuh (1913), in giving his principles of treatment condemns any immediate enterostomy, or cecostomy, presenting figures which showed no recoveries from such cases. However, the temporary recovery in the patient here reported, and following such a procedure, would seem to contradict his statements in some degree.

REPORT OF CASE

CASE 1.—Name: T. C., white male, age 17 years, admitted to Tulare County Hospital as an emergency case about 5 P.M., May 28, 1942. He stated that he had been acutely ill with sudden onset, since 4 P.M., May 27, 1942, with intestinal cramps, no bowel movements, no passage of blood, or mucus. His abdomen had become more and more distended the night of the 27th and especially so on the day of admission, and the cramps had not subsided even after several doses of an opiate administered hypodermically. He had vomited shortly after the onset, and this had continued intermittently, as had his cramps, until, at the time of admission the vomiting had become fecal in character.

Past History.—Development had been normal during early infancy, but during childhood, until the time of ad-

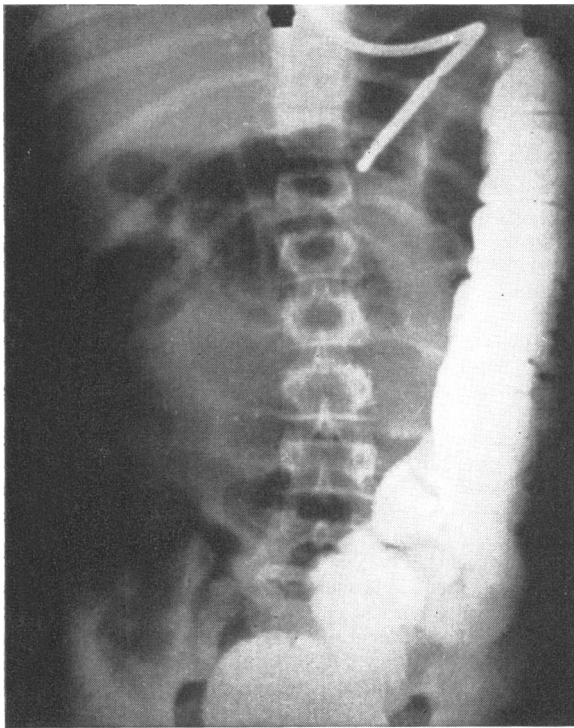


Fig. 1.—Antero-posterior x-ray after barium enema. Note left-sided colon.

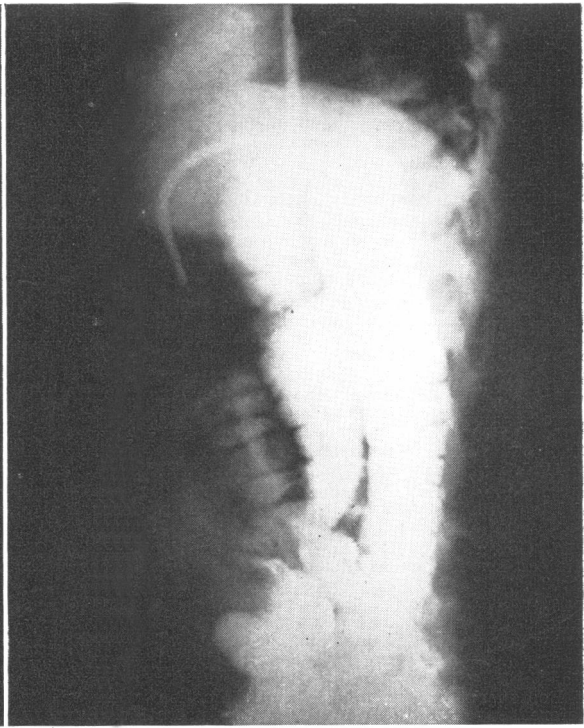


Fig. 2.—Lateral x-ray after barium enema. Note three different loops of colon in three different sagittal planes.

mission, there had been several attacks of cramps, vomiting, and diarrhea, the last attack prior to the present illness occurring one year prior to hospital admission. There had been no previous operations.

Physical Examination.—(On admission.) Acutely ill white male of about stated age, with easily apparent abdominal distention. On observation he appeared to have intermittent attacks of pain in his abdomen. Temperature—99.6, pulse—88, respirations—22. Blood pressure—124/74. Eyes, ears, nose and throat: negative.

General Examination.—This was essentially normal except for the abdomen which was distended, tympanitic, with borborygmus, and metallic tinkling. There was tenderness over the entire abdomen, no masses were felt abdominally or rectally. Blood count: Hemoglobin—108 per cent; R.B.C.—6.05 million; W.B.C., 28,300; N—91 per cent; L—9 per cent. Urine: One plus albumin. Very faint trace of sugar, loaded with hyaline and granular casts, 25-35 pus cells, few blood cells. Enemas were administered in an attempt to reduce a suspected intussusception, but there was no resulting stool, blood or mucus.

Barium Enema: This examination was done following the administration of enemas mentioned above. The resulting pictures are shown as Figs. 1 and 2, the striking finding being the absence of a transverse colon in its proper relationship, the lateral view giving the explanation since here a second loop of colon lay anterior and parallel to the descending colon, and a third loop was seen anterior to this second loop. None of the colon was seen on the right side of the abdomen, yet it filled readily for 2/3 of its length. There was a marked generalized gaseous distention seen.

Surgery.—Operation performed May 28, 1942, under spinal anesthesia of pontocaine and procaine, consisting of the following:

Para-umbilical, para-median incision eight inches long was made. On incising the peritoneum approximately 1,750 cc. of blood-tinged, serous fluid was aspirated. The cecum immediately presented in the wound (to the left of the umbilicus and very high). It was dilated to about four inches in diameter, and was of a dusky, brownish color, with dark greenish areas present, each measuring 2 cm. in diameter. The appendix and the entire ileum, as well as the entire ascending colon, or what would have been the ascending colon, if properly placed, were dilated in proportion and of a similar color. On following down the loop of intestine so involved, a very long mesentery was discovered which appeared to be a continuous ileo-

ceocolic mesentery, with very narrow base. The entire loop described above had twisted clockwise (viewed from in front and below the patient) having as its axis, apparently, the superior mesenteric vessels, the volvulus being 270°. There were many adhesions appearing old in character which had to be freed before it was possible to untwist this loop. Even then, the colon did not seem to be entirely free but it was possible to bring the cecum into the lower right quadrant of the abdomen, and examination of the ileum at this time revealed a Meckel's diverticulum about ten inches from the ileo-cecal valve. The omentum was never visualized, if it existed. After reduction of the volvulus, the color of the involved intestine improved to such an extent that it was thought viable. The distention also decreased but later, this was found to be due to involuntary stool passed on the operating table.

A cecostomy was then performed (Stamm, but no attempt was made to remove the Meckel's diverticulum), through a right lower abdominal incision, after closing the original incision. A glass cecostomy tube was used, the wound closed about the tube and dressings applied.

The patient was in moderate shock on leaving the operating room, pulse was 148, of fair quality. Sulfadiazine was administered intravenously (sodium salt).

Course: Fever went to 105° F. during the first forty-eight hours, skin was cold and clammy. Intravenous fluids were administered freely, and continuous duodenal suction was used for five days. The cecostomy drained freely, the patient gradually improved, the temperature gradually subsided to normal, and the patient left the hospital on the 36th day, improved, having stools with enemas only, and with the cecostomy still draining. There had been intermittent spells of abdominal cramping before dismissal from the hospital, and these became gradually worse, to be followed by the loss of weight and appetite, and finally by vomiting in July, 1942 (six weeks after first operation). Fecal vomiting ensued July 8, 1942.

On July 9, 1942, he was again operated on by his family physician. This operation was reported as being long and trying, with many adhesions, the cecostomy appeared to be mechanically all right, but an obstruction was found in the upper ileum, apparently by old adhesions. These adhesions were so dense as to require resection of two inches of ileum, and side-to-side anastomosis. The post-operative condition was again very poor. For ten days he gradually improved, then after being at home for one week the wound broke down and he had fever of 101°-102°

daily, with gradual loss of weight, and foul drainage from wound, as well as fecal drainage from cecostomy.

On August 24, 1942, the patient returned to the Tulare County Hospital having moderate abdominal distention, with some tympany, but free fecal drainage from cecostomy wound. The operative wound was still draining purulent material. He was generally emaciated, and there were broncho-vesicular breath sounds at the left base posteriorly. His death from clinical pneumonia took place on August 28, 1942, just ninety days after his first admission.

Autopsy.—Performed at Tulare County Hospital, August 28, 1942. Aside from the general wasting, and the finding of a moderate degree of pneumonic process in both lungs, the most interesting information was observed in the abdominal cavity. The entire abdomen had been involved in a severe peritonitis which had caused adhesions of each loop of bowel to its neighbor, with fibrin present in all interstices. There were also several accumulations of yellow sero-purulent material both intraabdominally and in the abdominal wall itself, as well as extra-peritoneally between the rectum and bladder. There was a mal-rotation of the colon, which had been partially corrected by surgery, the cecostomy being open, and no obstructive lesion appeared to remain anywhere. The mesentery of the ascending colon was fully as long as that of the transverse colon, allowing great mobility of the ascending colon. All other abdominal organs appeared normal, both externally and on cut section. The immediate cause of death was, therefore, generalized peritonitis with wound separation, and terminal pneumonia.

SUMMARY

1. The literature for the past decade on the subject of volvulus of the cecum has been reviewed in part.

2. The relationship of congenital mal-rotation, mal-descent, and improper fixation of the cecum, has been discussed as an etiological factor in the occurrence of cecal volvulus.

3. A case is reported, which unfortunately terminated fatally, in spite of timely surgery.

4. The author is in complete agreement with the conclusions of Morris, and Wolfer, and others, that prompt recognition by careful history, roentgenograms made early, followed by early surgery, will give the only satisfactory results in such cases; and that cecostomy or exteriorization should be the method of choice in treating acute cases, reserving resection for patients whose general condition is very good.

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Oppenheim's Disease.—The describer of amyotonia congenita, Hermann Oppenheim, was also the author of important treatises on traumatic neuroses, neurology, brain tumors, myasthenic paralysis, and cerebral syphilis. He was a man of boundless energy, earnest and indomitable. By his keen interest in neurology, he not only created a successful career for himself in this field but made far-reaching advancements that left their impress upon modern neurological science.—Warner's *Calendar of Medical History*.

RUPTURE OF THE URETHRA, AND IMPASSABLE STRICTURE OF THE URETHRA*

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THESE two separate entities are considered together because they are alike in that there is (1) dissolution of continuity of the urethra, (2) there is retention of urine, and (3) the bulbomembranous urethra is usually the site of involvement. Because of these similarities, the same general plan of treatment applies to both.

It is important at the present time that the general practitioner should have a better grasp of the fundamentals of the treatment of these conditions because of the increasing number of urethral injuries incidental to the accelerated pace of industry and the hazards of war. Unfortunately, the medical student learns little of practical value about their management in medical school, and textbook descriptions are so involved and contradictory that he is left in a state of utter bewilderment. As a matter of fact, the management of these conditions is comparatively simple provided certain principles of treatment are understood and followed.

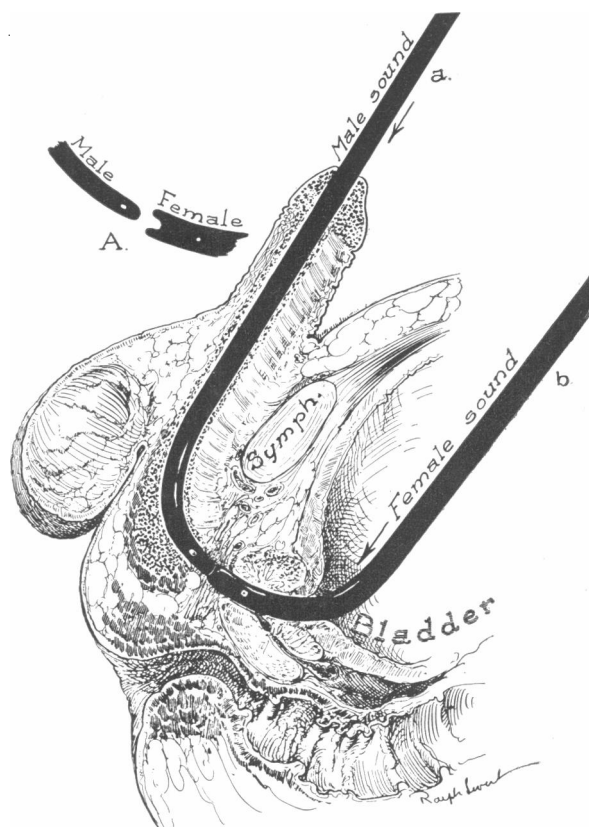


Fig. 1.—Drawing illustrating reestablishment of continuity of urethra with Davis interlocking sound technique applicable both in rupture of the urethra and impassable stricture of the urethra. If stricture formation is so dense that sounds A and B cannot be approximated, the intervening scar tissue is excised through a small perineal incision. They are then approximated and A follows B on into the bladder. A catheter tied to A is drawn out through the urethra and left in place for permanent drainage and as a splint for healing.

* Read before the Section on Urology, at the Seventy-third Annual Session of the California Medical Association, Los Angeles, May 7-8, 1944.